THE ENERGY OBSERVER

Energy Efficiency Information for the Facility Manager

Quarterly Issue – June 2006

Tankless or Instantaneous Domestic Water Heaters

The Energy Observer summarizes published material on proven energy technologies and practices, and encourages users to share experiences with generic energy products and services. This quarterly bulletin also identifies informational sources and energy training for facility managers and staff. ***The Energy Observer*** is a service of the **Energy Office, Michigan Department of Labor & Economic Growth.**

Water heating in a commercial building poses many challenges. Heating water for hand washing alone can become quite expensive.

This issue of the Energy Observer will explain the options available for domestic water heating and describe a technology that could save your facility hundreds of dollars per year.

Most Common Options for Water Heating

Conventional water heaters have a large tank of water that is heated directly by electricity or propane or gas. The water in the tank is maintained at a set temperature and can result in wasted energy.

Indirect water heating is accomplished by using a main source of heat to heat water in a storage tank through a heat exchanger. This can be done with electricity, gas, oil, propane, solar energy or a combination of any of these.

Tankless or Instantaneous water heaters operate by passing the flow of water through a heat exchanger and only heating the water as it is used. This arrangement eliminates the need to maintain a set temperature in a large-volume tank of water These units are both energy-efficient and space-efficient.

Each application is different and may require a different type of water heater for best efficiency. Carefully review your options before you make a decision.

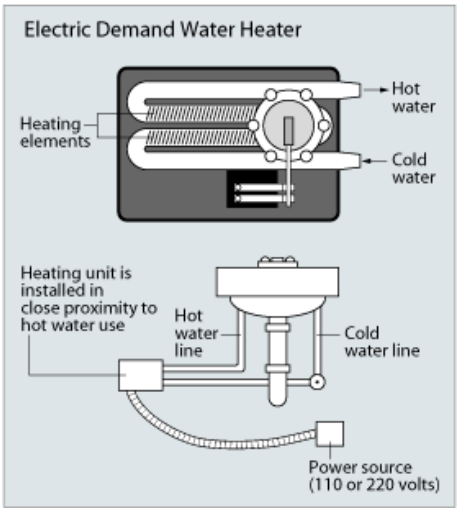
How They Work

When hot water is called for, the tap is turned on or water pressure increases. Cold water travels through a pipe into the tankless hot water unit and either a gas burner or an electric element heats the water. The water is heated as it flows through the heating elements or heat exchanger. As the water pressure fluctuates, the heating element is adjusted to maintain a constant temperature and maximum energy efficiency. When there is no more demand for hot water, or when water pressure has been reduced, the unit turns off.

Applications for this Technology

In commercial buildings tankless water heaters will not always be the best choice. However, remote bathrooms, concession stands, specialty use or other low users are good applications for a tankless water heater.

In most cases you will eliminate the storage tank or reduce the distance that the hot water needs to travel. In either scenario heat loss is avoided by using an on-demand, point of use system.



Source: US Department of Energy

Selecting Equipment

Demand water heaters can cost more than conventional storage water heaters. However, a tankless water heater may have lower operating and energy costs, which could offset its higher purchase price.

Before buying a tankless water heater, you also need to consider the following:

Type - there are two main types of tankless water heaters: electric and gas/propane. Choosing between them depends on how much you want to spend, whether you have access to gas/propane, and the cost of each fuel type. Gas tankless systems generally have wider applications because they produce

hot water at higher flow rates. An electric tankless system is an appropriate choice only when gas is not an option.

Size or Capacity - Decide on the appropriate water heater model depending on what capacity or size you need during peak demand, the incoming water temperature, and the desired outgoing water temperature. Choose the model of water heater closest to your flow rate and temperature rise needs. Choose the capacity during peak demand based on the number of users, the number of water fixtures, and the number of hot water devices you expect to have operating at one time. Add up their flow rates to determine your desired flow rate for the demand of water from the heater.

TAKE CAUTION

Units that have constantly burning pilot lights can sometimes offset the elimination of standby energy losses when compared to a storage water heater. In a gas-fired storage water heater, the pilot light heats the water in the tank so the energy is conserved. The cost of operating a pilot light in a demand water heater varies from model to model. Ask the manufacturer how much gas the pilot light uses for the model you're considering.

In some cases hot water use can increase when a tankless water heater is added. This is because the hot water is now unlimited; before, when the hot water ran out, showers and other uses were cut short. The overall water use budget may rise, and therefore cost more. However, the water will still be cheaper by volume heated. The best way to ensure savings is to look at the cost per unit of heated water—and to educate users about the general importance of conservation to prevent waste.

MAINTENANCE

Most tankless water heaters have a life expectancy of more than 20 years. They also have easily replaceable parts, which extend their life.. In contrast, storage water heaters last 10-15 years. Periodic water heater maintenance can significantly extend your tankless water heater's life and minimize loss of efficiency. Read your owner's manual for specific maintenance recommendations.

ADDITIONAL SAVINGS

Additional hot water savings could be realized by:

- Installing low flow fixtures on sinks and showers
- Insulating any hot water pipes
- Lowering water temperature

FUNDING OPPORTUNITIES

Rebuild MI Workshop and Event Financing Incentive
Up to $2,500 available, proposals due by September 1, 2006

Energy Smart Schools Incentive
Up to $6,000, proposals due by July 31, 2006

more information on both of these opportunities:
www.michigan.gov

We would like to encourage all of our readers to consider receiving this publication via e-mail. This will reduce the cost of producing our publication and the amount of paper consumed. Please contact the Energy Office to request an e-mail subscription to this publication.

Visit the Energy Office website for information on current programs, services, past issues of ***The Energy Observer*** and grant information.
www.michigan.gov/energyoffice

For more information on this issue or past issues of ***The Energy Observer***, contact:
MI Energy Office
PO Box 30221
Lansing, MI 48909
e-mail: erdinfo@michigan.gov
fax: (517) 241-6229

Subscription Form

Thank you for subscribing! Feel free to share this with your friends and co-workers. They can receive their own subscription by contacting us with the following information:

Company/ Department: _____

Name: _____

Address: _____

_____

Phone: _____

E-mail: _____

☐ I would like to START my free subscription to ***The Energy Observer***

☐ I would like to CANCEL my free subscription to ***The Energy Observer***

Return this information to the Energy Office Contact Information is listed above.

The Department of Labor & Economic Growth will not discriminate against any individual or group because of race, sex, religion, age, national origin, color, marital status, disability or political beliefs. If you need assistance with reading, writing, hearing, etc., under the Americans with Disabilities Act, you may make your needs known to this agency. 230 copies were printed of this newsletter at 11.3 ¢/copy.